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HAMILTON TRANSIT STUDY

PHASE II

JUNE 1973



De Leuw Cather

SPECIAL COLLECTIONS

The Hamilton Street Railway Company

18 Wentworth St. N.



Hamilton, Ontario

Founded 1873

July 11th, 1973

The Minister,
The Ontario Department of Transportation
& Communications,

and

The Chairman,
The Hamilton Transit Commission.

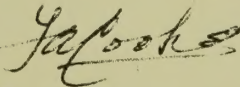
Gentlemen:

In March 1972, the Report on Phase I of the study of The Hamilton Street Railway Company, conducted by DeLeuw, Cather & Co. of Canada, Ltd., was submitted for your consideration.

The Hamilton Transit Study Committee has now completed the task assigned to it as Phase II of the above study. The report of the Consultants has been received by the Committee and is summarized in this volume.

The Study Committee endorses the subject matter of the Report and the recommendations made therein.

Yours very truly,



F. A. Cooke
Chairman

THE HAMILTON TRANSIT STUDY COMMITTEE

De Leuw, Cather

ENGINEERS AND PLANNERS

June 29, 1973

Mr. F.A. Cooke
Chairman
Hamilton Transit Study Committee
Hamilton, Ontario

Dear Mr. Cooke:

Re: Hamilton Transit Study - Phase II

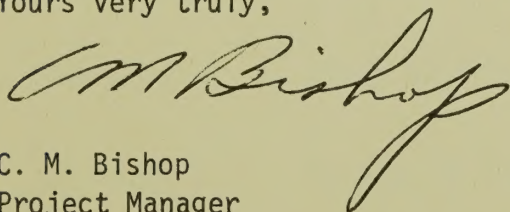
We are pleased to submit herewith our report of the work and findings of Phase II of the Hamilton Transit Study.

The report includes recommendations for immediate measures which would benefit existing passengers, development routes which would have potential to attract new riders and demonstration projects covering dial-a-ride and park-and-ride.

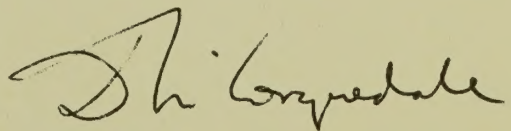
This report is a summary of the working papers, data and memoranda submitted during the course of the study to the Hamilton Transit Study Committee.

We would like to thank you, your staff, members of the City departments and representatives of the Ministry of Transportation and Communications for the help and guidance given on this project.

Yours very truly,



C. M. Bishop
Project Manager



D. McCorquodale
Senior Vice-President

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2.	DISTRIBUTION OF BUS TRIP ORIGINS
3.	ROUTE PROPOSALS ON THE MOUNTAIN
4.	SHORT-TERM PROGRAM FOR THE EAST END
5.	ROUTE PROPOSALS IN THE CENTRAL AREA
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REPORT
HAMILTON TRANSIT STUDY PHASE II

1. BACKGROUND

This is a report on Phase II of the Hamilton Transit Study. The first phase of the study completed in March 1972, was a preliminary study of the bus transit system in the City of Hamilton. It identified the areas where there was a potential to improve the effectiveness of transit over the short term. Phase II was designed to investigate these prospects in more detail and to recommend specific route changes, schedule adjustments and other improvements in sufficient depth to enable them to be implemented at an early date, if approved by the Hamilton Transit Commission.

The Terms of Reference for Phase II are reproduced in Appendix A. Items for study were concerned primarily with operational changes and improvements for route efficiency and service to present passengers over the short term. Methods of attracting new passengers were considered where these would also benefit present users.

The study was initiated in October 1972 by the Hamilton Street Railway Company with participation by the City of Hamilton and the Ontario Ministry of Transportation and Communications. It was directed by the Hamilton Transit Study Committee and carried out by De Leuw Cather, Canada Ltd., Transportation Consultants. The members of the Committee are listed in Appendix B.

The work of the study is described under the main topic headings listed below:

Bus Passenger Survey and Public Comments
 Service on the Mountain
 Service in the East End
 Service through the Central Area
 Service to Industry on Burlington Street
 Needs of the Handicapped
 Limited Stop and Express Bus Service
 Potential for Dial-A-Ride and Park-And-Ride

Technical details are available in various technical memoranda and reports produced during the study.

Exhibit 1 shows the Existing Bus Routes operating in January 1973 and Table 1 gives statistics on the HSR operations for the year 1972.

TABLE 1
SYSTEM STATISTICS 1972

Hamilton Population (1971)	-	301,500
Route miles	-	358
Revenue vehicles	-	231
Annual miles operated	-	7,808,000
Revenue passengers carried	-	24,417,000
Revenue passengers carried per mile	-	3.1
Direct revenue from operations	-	\$6,015,000
Typical weekday passenger volume	-	80-90,000
Typical weekday transfers collected	-	25,000

2. SUMMARY OF RECOMMENDATIONS

The recommendations of the study are summarized in the following three tables. Table 2 lists those measures which can be taken immediately and which would result in operational improvements of benefit to existing passengers. Table 3 is a list of measures which have development potential to attract new riders. Table 4 gives recommendations for dial-a-ride and park-and-ride demonstration projects.

In each case the impact of the recommendations on the transit riders is given together with an estimate of the extra equipment required to implement each recommendation.

TABLE 2
RECOMMENDATIONS FOR IMMEDIATE MEASURES

<u>RECOMMENDATION</u>	<u>IMPACT</u>	<u>EQUIPMENT ESTIMATE</u>
1. Delete MacLander's leg of the Fennell route. Divert Fennell route from Mohawk Road to Bendamere Avenue. See Exhibit 3	Fennell route simplified. Service duplication on Mohawk Road removed. Service provided in Buchanan Park neighbourhood. Fennell route length reduced. Direct (not transfer) Fennell service lost where route deleted. Service frequency to Upper Paradise increased.	No change in number of buses required.
2. Operate new route on West 5th Street from Stone Church Road to CBD via Jolley Cut. See Exhibit 3	Replaces deleted MacLander's leg of the Fennell route. Direct routing from West 5th Street to CBD provided.	Requirement: 4 additional buses.
3. Extend one half of Mohawk service via Rice Avenue to Brow Infirmary. See Exhibit 3	Access to Chedoke Hospital and Brow Infirmary improved for trips originating on the Mountain.	Requirement: 1 additional bus.

TABLE 2
RECOMMENDATIONS FOR IMMEDIATE MEASURES
(Continued)

<u>RECOMMENDATION</u>	<u>IMPACT</u>	<u>EQUIPMENT ESTIMATE</u>
4. Divert Mohawk route via Upper James, Wembley and West 5th Street. See Exhibit 3	Access between Mohawk College, Mountain Breeze Shopping Centre, and points along the Mohawk route improved. Travel time for Mohawk route trips crossing Upper James and West 5th Street increased.	Requirement: 1 additional bus.
5. Divert Upper Ottawa route along Queensdale Avenue between Upper Gage and Upper Wentworth. See Exhibit 3	New service on Queensdale Avenue between Upper Gage and Upper Wentworth. A few Upper Ottawa passengers will have to transfer to reach Concession Street.	No additional equipment required to maintain present headway.
6. Extend present King Stub service easterly to Gray's Road. Rename service, Queenston Road. Extend evening service on Saturday and Sunday. See Exhibit 4	Service provided to developing areas east of Lake Avenue.	Requirement: 1 additional bus.
7. Approach Stelco with a request for rearrangement of internal bus services to bring employees from Wilcox Gate to the Burlington Gate. See Exhibit 6	Interface between internal bus service and public transit improved.	Requirement: Increase in Stelco internal bus mileage.
8. Provide reserved seats for handicapped on buses. Provide information and training to the handicapped on the use of public transit. Provide technical assistance to organizations operating special transit services for the handicapped. Enter into contracts for transportation of the handicapped using off-peak vehicles. Encourage senior governments to sponsor development of new transit vehicles which can more easily be used by the handicapped.	The needs of some of the handicapped would be met. Handicapped may delay regular services. (Before a final policy on transportation for the handicapped is reached by the City or the Commission, a comprehensive study should be undertaken.)	No increase in fleet size required.

TABLE 3

RECOMMENDATIONS FOR DEVELOPMENT ROUTES

<u>RECOMMENDATION</u>	<u>IMPACT</u>	<u>EQUIPMENT ESTIMATE</u>
1. Operate a development route from Upper James and Aldridge to the industrial area via the Claremont Access. Route should be integrated with Upper James-Crosstown and Sherman services. See Exhibit 5	Direct routing from Upper James to areas east of Wellington Street, avoiding the CBD. Direct routing between the east central area and the industrial area and Mountain. Reduced frequency on extremities of Sherman and Upper James-Crosstown routes. Improved frequency on the common sections of the routes.	Requirement: 4 additional buses
2. Extend Sherman route from Wilcox Street via Burlington Street, Ottawa Street and Industrial Drive. Integrate service with Upper James-Industrial development route described above. See Exhibit 6	More industrial workers brought into scope. Interface with Stelco internal services improved. Frequency on common sections of route improved. Frequency on southern extremity of route reduced.	No extra equipment required.
3. Extend Fennell route from Gage and Industrial Drive to Wilcox and Burlington Street. See Exhibit 6	More industrial workers brought into scope. Interface with Stelco internal bus services improved.	Requirement: 1 additional bus
4. Extend Beach route from Kenilworth and Barton up the Kenilworth Access to Upper Ottawa and Limeridge Road. See Exhibit 5	Direct service, without transfer, between Upper Ottawa area, Kenilworth Avenue, the industrial area and the beaches. Beach residents will have improved access to the south end of Kenilworth Avenue, the Mountain and the Cannon, King Delaware and Fennell routes.	Requirement: 4 additional buses

TABLE 3
RECOMMENDATIONS FOR DEVELOPMENT ROUTES
(Continued)

<u>RECOMMENDATION</u>	<u>IMPACT</u>	<u>EQUIPMENT ESTIMATE</u>
5. Extend the Delaware-Potruff service via Highway 20 to Queenston Road. See Exhibit 4	Access between the east end and points on the Delaware route improved. A variety of transfer connections at Queenston Road would be available.	Requirement: 3 additional buses
6. Divert Stoney Creek route to Eastgate Plaza on Queenston Road via Highway 20. See Exhibit 4	Stoney Creek residents would have direct service to a major commercial centre and a wider choice of transfer connections.	No extra equipment required.
7. Extend Stoney Creek route easterly to Gray's Road. See Exhibit 4	More Stoney Creek/Saltfleet residents brought into scope. Frequency of service improved.	Requirement: 1 additional bus
8. Divert off-peak Nash-Barton route to Eastgate Plaza via Queenston Road. See Exhibit 4	Puts major commercial centres on Nash-Barton route for attraction of off-peak shopping trips.	No extra equipment required for peak service.
9. Divert Barton leg of Nash-Barton route via Highway 20, Delawana Avenue and Lake Avenue. See Exhibit 4	Increases transfer opportunities Gives residents along Barton Street improved access to major commercial centre.	Requirement: 1 additional bus
10. As a long term recommendation: eventual linking of routes through the Barton and Main West corridors. No other linkages should be considered in the meantime.	Direct routing between Barton and Main West corridors provided.	Equipment requirement to be determined before recommendation is taken up.

TABLE 4

RECOMMENDATIONS FOR DEMONSTRATION PROJECTS

<u>RECOMMENDATIONS</u>	<u>IMPACT</u>	<u>EQUIPMENT ESTIMATE</u>
1. The most suitable area for a dial-a-ride demonstration project is Dundas, Ontario. An intensive study is warranted before undertaking the project to establish demand and service requirements. See Exhibit 7.	Public transit made available to areas in Dundas which are unlikely to be successfully served by fixed route services. Results of dial-a-ride demonstration project can form basis of trials in other areas.	Requirements to be determined by an intensive study.
2. Potential sites for park-and-ride demonstration projects have been identified at the following locations. An investigation of availability and method of operation of each site is necessary. - closed supermarket lot at Highways 2 and 8. - Hydro right-of-way adjacent to the above site. - closed supermarket lot at Fennell and Upper Wentworth. - closed supermarket lot at Fennell and Upper Gage. - unused spaces on weekdays in shopping centre lots along Queenston Road. - Open space north of King Street between Potruff Road and Red Hill Creek. See Exhibit 7	Use of public transit increased. Traffic reduced on roads to CBD and industrial area. Results of demonstration projects can form basis of park-and-ride projects at other points.	Requirements to be determined by further investigation.

TABLE 4
RECOMMENDATIONS FOR DEMONSTRATION PROJECTS
 (Continued)

<u>RECOMMENDATIONS</u>	<u>IMPACT</u>	<u>EQUIPMENT ESTIMATE</u>
3. Test the acceptance of express bus service from Vincent/Red Hill to the CBD.	Transfer eliminated for journey to CBD. Small time saving for trip.	Requirements to be determined.
4. Publicize CCL express services to the CBD particularly from the east end.	Improve utilization of premium services offered by CCL.	May need additional equipment depending on response.

3. BUS PASSENGER SURVEY AND PUBLIC COMMENTS

The study was carried out on the basis of data collected on the travel patterns and wishes of the transit users. This information was secured from a number of sources including: the regular daily statistics collected by the HSR, a bus passenger survey, an analysis of transfers collected, letters from the public, comments received at public meetings and meetings with special groups such as industry and the handicapped.

In the bus passenger survey all passengers travelling in one direction on a weekday in November 1972 were given a survey card and asked to answer detailed questions on their travel habits and to comment on the service. Some thirty percent of the questionnaires were returned, giving a good sample for analysis purposes.

The most significant finding from the bus passenger survey is that the majority of passengers are well served by the present route system. Basically the system consists of major routes radiating from the central business district, the major single traffic generator, to all parts of the City. These radials are supplemented by grid routes which cross them at intervals to enable passengers to travel to various parts of the City without having to make a long detour through the central business district. This system is not perfect, of course, and about thirty percent of passengers have to transfer between routes. However, it represents a reasonable compromise between directness of routing, service frequency and efficiency.

The daily trip origins of present passengers are shown in Exhibit 2. The CBD (central business district) is shown in red; trip origins for the CBD are given in figures. This information together with route desire lines and the actual route to route transfers on the system has confirmed that the present routes should remain, because any changes would inconvenience the majority of present passengers. The opportunities investigated in the study therefore concentrated on items which avoid changes in existing service, including:

- the connection of existing routes through the Central Area,
- the elimination of stub shuttle routes at the ends of major trunk routes,
- the introduction of new routes and special services to meet existing demand and to attract new passengers to the system.

The questionnaire used in the bus passenger survey asked respondents to check the three features of service which he or she would most like to see improved. There was also space provided to write in other comments.

Analysis of the 37,900 responses to this question gave the following ranking of features which users would most like to see improved:

<u>Feature</u>	<u>% Total Response</u>	<u>Feature</u>	<u>% Total Response</u>
Frequency	22%	Route Extensions	5%
Bus Shelters	17%	Courtesy	5%
Weekend Service	12%	Walking distance to bus stop	4%
Evening Service	11%	Cleanliness	3%
Speed of Travel	7%	Transfers	3%
		Other Items	11%

The public was invited to contribute their comments and suggestions to the study during the bus passenger survey and through public meetings.

The letters and public meetings drew attention to areas where there is a desire for better coverage, frequency of service and bus shelters as well as diverse matters ranging from student fare problems to rear window destination signs. Many letters commended the drivers for the job they do.

All of the suggestions have been tabulated and passed on to the HSR for consideration. Those which concerned route planning were taken into account in developing the recommendations for short-term improvements or demonstration projects to test the market potential for new services which follow.

The actual route to route transfers occurring on a weekday in June 1973 are tabulated in Table 5. The figures shown in this table generally confirm the pattern of transferring derived from the bus passenger survey.

Although the Phase I study referred to transferring as a problem, there was surprisingly little complaint about transferring from the survey, in the letters or at the meetings. However, a number of complaints and suggestions were directed at items associated with transferring, such as missed connections and the need for shelters. Transfers probably also deter some residents from using the system particularly where more than one transfer is required to complete a journey.

TABLE 5

ANALYSIS OF TRANSFERS COLLECTED BY ROUTE

(TUESDAY, JUNE 12, 1973)

FROM		TO																												TOTALS
		KING	BARTON	CANNON	BAYFRONT	DEL-MAIN W.H.	UNIVERSITY	ABERDEEN	LOCKE	SHERMAN	PARKDALE	UPPER KENILWORTH	UPPER OTTAWA	UPPER GAGE	UPPER SHERMAN	UPPER WENTWORTH	UPPER WELLINGTON	CROSSTOWN	FENNEL	GARTH	SANATORIUM	MOHAWK	DUNDAS	BURLINGTON	STONEY CREEK	BEACH	NASH BARTON	KING STUB		
		(3) 174	27 351	326			55 124	81 76	39		105 38	58 89	102			77 61	165 8	143		17 73	-	1			-	4	1	381	2,579	
		228 (98)	61 350	435			50 178	93 105	44		278 59	99 90	137			60 90	155 12	170		27 58	2	7			1	47	241	23	3,198	
		33 58	(8) 118	126			18 39	34 35	17		48 11	26 35	52			47 17	43 8	45		8 30	5	-			-	2	2	7	872	
		258 300	118 (27)	377			24 94	75 66	7		22 49	30 30	72			45 56	81 16	117		10 33	7	15			6	24	36	33	2,028	
		209 503	119 402	(136)			13 116	70 71	64		109 89	68 97	121			81 99	202 6	103		22 88	7	3			42	9	82	15	2,946	
		120 82	32 48	39			(3) 30	9 11	-		2 18	23 16	21			8 19	38 -	6		3 13	1	-			-	-	2	7	551	
		84 115	53 59	117			20 (6)	15 12	-		9 18	11 8	20			20 18	22 3	2		7 12	-	-			-	-	1	5	637	
		105 132	42 69	65			8 23	(2) 4	-		1 10	9 17	13			13 6	46 -	3		1 8	-	1			-	-	5	1	584	
		60 90	43 71	48			2 24	10 (5)	-		7 12	10 12	13			5 6	27 -	5		1 8	6	-			-	2	11	-	478	
		23 40	13 12	36			3 -	-	1	-	-	-	8			-	-	-		-	-	-			2	-	-	-	-	139
		100 154	37 14	90			2 14	-	5	-	(5) -	5 -	5			1 2	1 -	12		-	2	-	3		3	2	10	13	480	
		63 72	27 52	95			4 25	15 16	-		1 (4)	2 2	2			5 4	18 -	65		1 6	17	-	-		-	-	2	7	506	
		74 83	17 42	85			14 16	13 9	-		1 1	(4) 1	-			1 8	16 -	55		1 8	8	-	-		-	2	6	1	466	
		54 97	35 41	83			11 14	21 11	-		2 -	-	(8) 3			7 6	32 -	35		1 7	11	-	-		-	-	1	10	490	
		86 129	52 71	117			8 27	24 11	1		5 -	-	1 (2)			8 12	24 -	60		2 13	8	-	-		-	-	-	7	668	
		74 105	26 49	67			13 27	17 13	1		3 3	9 6	3			(1) 1	19 -	28		3 5	11	-	-		-	2	1	-	488	
		61 97	28 71	105			15 25	14 11	-		1 5	9 5	19			-	(2) 4	1 32		2 4	13	-	-		-	-	-	1	525	
		115 152	52 99	175			27 40	41 32	-		3 22	29 31	37			12 2	(13) -	92		10 10	78	2			1	-	1	15	1,091	
		44 33	11 23	12			-	3 -	1	-	2 -	-	-			1 -	2 (-)	9		-	-	7	-		-	-	2	3	155	
		194 257	33 212	186			4 8	3 3	7		36 62	65 32	55			30 25	136 24	(17)		5 27	29	1		3	8	13	39	1,514		
		27 27	7 16	18			8 3	3 2	-		2 -	1 -	-			2 -	3 2	8		(-) 2	14	1		-	-	-	2	1	149	
		42 77	33 28	64			13 29	2 3	-		3 6	4 8	6			1 2	3 -	36		1 (1)	10	-		1	-	6	1	380		
		1 2	4 1	8			-	-	-		1 13	2 17	11			16 16	96 15	7		15 9	(-)	-		-	-	-	-	-	235	
		NO TRANSFERS																												
		ISSUED																												
		-	-	-	57		-	-	1		2	-	-	-		-	-	1	1	-	-	-	-		(-)	-	1	-	63	
		124 70	9 83	29			-	15 1	3 5		6 4	6 2	8			1 3	6 -	28		-	8	2	-		(-)	8	7	428		
		1 95	-	14	52		2 4	-	1	-	8 -	-	1			-	1 -	5		-	4	-	-		2	2	(6)	3	201	
		117 8	-	18	12		1 2	3 -	-		12 -	1 3	1			2 -	2 -	6		-	2	-	-		-	-	2	(-)	192	
TOTALS		2,300	3,050	887	2,960		318	886	547	185	674	424	471	705		444	455	1,050	96	137	431	236	37	61	104	442	580			22,043

4. SERVICE ON THE MOUNTAIN

Over one-third of the total daily trips on the Hamilton Street Railway are generated by areas on the Mountain. The breakdown of transit use is shown in Table 6.

TABLE 6
PRESENT TRANSIT USE
HAMILTON MOUNTAIN AREA

	<u>Weekday Passenger Trips</u>
Trips between Mountain and the CBD (see Exhibit 2)	12,400
Trips between Mountain and the lower City between Wellington and Ottawa	5,700
Trips between Mountain and the lower City east of Ottawa	3,600
Trips between Mountain and the lower City west of Wellington exclusive of CBD	3,700
Trips between Mountain and the industrial area along Burlington Street	1,000
Local trips on the Mountain	<u>6,000</u>
Total traffic associated with the Mountain	32,400

The basic north-south route configuration oriented to the central business district via the Jolley Cut is an excellent one. The pattern of existing transit trips on the Mountain is closely related to the present route configuration and any change would disrupt a number of present riders.

The main problem of service on the Mountain is the restriction in the number of access points from the Mountain to the lower City. This tends to concentrate the services particularly at the top of the Jolley Cut, which is used by seven routes, and in the CBD.

Another problem is the relatively light development south of Mohawk Road. While these areas are developing rapidly the population has not reached a density that will generate sufficient trips to make transit economically viable.

An alternative system of bus routing, based on the establishment of a major north-south corridor on the Mountain was examined, but rejected for the following reasons:

- . It would reduce service to the important Concession Street area.
- . It would reduce coverage due to the wider spacing of the east-west arterials, which are generally 5/8-mile apart compared with 1/2-mile on the north-south arterials.
- . It would not lend itself to service extensions into the developing areas south of Mohawk Road.
- . It would not offer cost or time savings as compared to the present route system.

Changes proposed to improve the effectiveness of the Mountain routes are shown in Exhibit 3 and described below:

Upper Ottawa Route

It is proposed that the Upper Ottawa route be diverted along Queensdale Avenue between Upper Gage and Upper Wentworth Streets. This will

provide service midway between Fennell and Concession with reduced walking distance for many of the residents along Queensdale Avenue. The results of the study showed that less than 20 of the present passengers on the Upper Ottawa route will be disadvantaged by this change and that approximately 800 present passengers will have better access to a bus route to the CBD.

Fennell Route

It is proposed to divert the Fennell from West 5th Street and South Bend via Laurier Avenue and Stacey Street to Bendamere Avenue, then westerly on Bendamere to Upper Paradise. This will take service into a residential area with a population of 4,000 people which presently has poor coverage. Terminating the Fennell at Bendamere and Upper Paradise does not remove service beyond acceptable walking distance of the residences west of this point. The rerouting will eliminate duplication of the Fennell and Mohawk routes along Mohawk Avenue which contribute to the poor financial performance on both routes west of Upper James.

West 5th Route

It is also proposed to delete the MacLander's leg of the Fennell route and replace it with a new West 5th route connecting to the CBD. The use of the Fennell route for service on the north-south arterial extends an already long route and does not serve the dominant desire of the residents of the area for service to the CBD. It is proposed that the new service should terminate at Stone Church Road.

Mohawk Route

It is proposed to strengthen the function of the Mohawk route as an

internal Mountain service by extending it to the west of the present terminal. The service would be branched at Rice Avenue with one leg serving Chedoke Hospital and the Brow Infirmary, and the other leg serving new development, west along Mohawk Road.

It is also proposed to divert the Mohawk route north on Upper James to Wembley, west on Wembley and south on West 5th Street to Mohawk. This will bring the Mountain Plaza Shopping Centre and Mohawk College into scope for residents along the Mohawk route and will give a transfer point to the new Fennell route. This detour will affect 170 present transit trips by adding about three or four minutes to the travel time for trips across the Mountain.

Other Proposals

Other proposals are to extend the Beach route up the Kenilworth Access to Upper Ottawa and Limeridge Road and to operate a development route from Upper James and Aldridge to the industrial area along Burlington Street. These proposals are described in Section 6, "Service in the Central Area" and shown on Exhibit 5.

5. SERVICE IN THE EAST END

The area of Hamilton east of Red Hill Creek has a population of 14,000 and the population of Stoney Creek is 9,800. Some 4,200 transit trips originate or terminate in this area during a typical weekday. Only 300 of these trips are local to the east end and the remainder are distributed throughout the City as shown in Table 7. Transit use in this area is about two-thirds of that for the City as a whole, reflecting the lower level of service provided in this area and the distance to major activity centres.

TABLE 7
PRESENT USE OF
HSR SERVICES EAST OF RED HILL CREEK

	<u>Weekday Passenger Trips</u>
Trips between east end and CBD (see Exhibit 2)	800
Trips between east end and other areas west of Wellington Street	700
Trips between east end and the lower City between Wellington and Ottawa	800
Trips between east end and the lower City between Ottawa and Red Hill Creek	1,250
Trips between east end and the Mountain	400
Local trips within the east end	<u>300</u>
Total associated with the east end	4,250

The main problem in the east end is that transit service is provided by stub routes which connect to the main trolley routes and the Delaware diesel bus route at Red Hill Creek. Therefore travel between the east end and other parts of the City involves at least one transfer. Linking up the stub and trunk routes could reduce these transfers and local service within this area could be made more attractive by focusing it on the commercial development along Queenston Road.

The east end is growing rapidly and there is increasing pressure for better service, both in Hamilton and in the adjacent residential areas of Saltfleet and Stoney Creek. In determining the potential for improved service in this area a longer term routing concept was developed which could have application over the next three to five years. A compatible short-term program, as required for this study, was then developed.

The basic longer term recommendation is to develop transit service to a strong focal point in the east end. At this point, local and trunk services would be coordinated to provide convenient interchange between routes. The transit focal point should also be a major centre of activity so that it is not only a transfer terminal but a main destination point for transit users. A logical place for this focal point is on Queenston Road between Nash and Centennial near the major commercial development in the east end.

The longer term proposal would allow for extension of existing trolley coach routes to the focal point and concentration of local services at the same terminal. If this plan appears attractive, we believe the City should take immediate steps to determine the future requirements and protect property for the proposed transit terminal and parking in the Nash-Queenston-Centennial area.

The short-term program for immediate development would not involve extension of the trolley coach electrification. The proposals are shown on Exhibit 4 and are described below:

Delaware Route

The Potruff leg of the Delaware route would be extended via Orphir, Rainbow, Nash, King and Highway 20 to Queenston Road. This would increase the coverage of the Delaware route, giving direct service to the CBD for an increased number of people in the area. Reverse trips from points along the Delaware route to the commercial area on Queenston Road would be generated. Transfers to the King stub would be possible.

Stoney Creek Route

With the extension of the Delaware service to Highway 20, transfer between the Stoney Creek and Delaware routes would be moved to King and Highway 20. The Stoney Creek route could then be diverted via Highway 20 to Queenston Road giving Stoney Creek residents access to the commercial areas at that point.

The Stoney Creek route should also be extended along King Street to Gray's Road giving better transit coverage to Saltfleet residents in that area.

Queenston Route

It is recommended that the King stub route be renamed the Queenston route to more closely identify it with the area served. It should be extended to Gray's Road to provide service for the developing areas east of Lake Avenue. Evening service on Saturdays and Sundays should be considered for this route to meet requests of the residents.

Nash-Barton Route

It is recommended that the off-peak service of the Nash Road segment of the Nash-Barton route be diverted to Eastgate Plaza via Queenston Road. This would put major commercial centres on the Nash-Barton route for the purpose of attracting off-peak shopping trips.

The Barton segment of the Nash-Barton route should be diverted in off-peak via Highway 20, Delawana and Lake Avenue to increase transfer opportunities and give residents along Barton Street improved access to a major commercial centre.

6. SERVICE THROUGH THE CENTRAL AREA

The Central Area referred to here is that part of the City below the Mountain and between Highway 403 and Red Hill Creek. The major feature of existing transit service in this area is a strong system of east-west routes which are radial to the CBD. The north-south crosstown routes are relatively less important. There are three recommendations for service change in this area:

- . A new development route from Upper James Street via the Claremont Access to the industrial area.
- . An extension of the Beach route onto the Mountain.
- . An eventual linkup between routes in the Barton and Main West corridors.

The first two recommendations are illustrated in Exhibit 5.

Claremont Access

The movement between the Mountain and the Central Area accounts for about 27% of the daily trips on the HSR. This movement can be expected to grow significantly as residential areas on the Mountain develop.

At the present time, Mountain services are heavily concentrated on the Jolley Cut with seven major routes converging on that access. Two routes use Beckett Avenue, one uses the Kenilworth Access and one peak period route uses the Claremont Access. In order to supplement the services between the Mountain and the lower City, it is recommended that a new development route be operated on the Claremont Access. The proposed route is shown on Exhibit 5.

The new service would be integrated with the existing peak period Upper James-Crosstown and Sherman services, but would operate all day. It is suggested that the new route be known as the Upper James-Industrial service.

The purpose of the new development route would be to stimulate transit use in the areas served by the Claremont Access, relocate some of the transferring now occurring in the CBD, and offer direct service between the Mountain, the Central Area and the industrial area along Burlington Street.

Beach Route

The present Beach route terminates at Kenilworth and Barton where some 200 daily transfers occur to the Bayfront route. The Bayfront route terminates at the Kenilworth Access loop where some 500 transfers take place between the Bayfront and Fennell routes. It is recommended that the Beach route be extended up Kenilworth Avenue and the Kenilworth Access to Upper Ottawa and Limeridge as shown on Exhibit 5. Initially, this service should continue to be operated in the peak period only with its timetable coordinated with the Burlington route. The extension of the Beach route would have a number of purposes, including:

- . elimination of transfers between the Beach and Bayfront routes;
- . give Beach residents one-transfer connections to six additional major routes (Cannon, King, Delaware, Fennell, Upper Ottawa and Upper Kenilworth);
- . give direct service between Upper Ottawa and Kenilworth Avenue thus reducing transfers between the Fennell and Bayfront routes;

- . improve access to industries east of Kenilworth Avenue along Burlington Street and Beach Avenue;
- . increase service on the Kenilworth Access.

Barton-Main Street West Connection

Nineteen of the twenty-eight HSR routes converge on the CBD and 65% of the 25,000 daily transfers on the system occur in the downtown area. The most obvious means of reducing this CBD transfer movement is a linkup of some of the routes. One such linkup between the Delaware route and the Main West, West Hamilton routes is already in effect. All route-to-route transfers were examined to determine where additional linkups might be appropriate.

Linking up routes can create operational problems. On a long route, headways become more difficult to maintain due to the cumulative effect of traffic delays. There may be a lack of balance between schedules and passenger demand on both parts of a linked-up route. The linking of a trolley coach route to a diesel bus route requires either extension of the trolley coach overhead or substitution of diesel buses for trolley coaches. In view of these problems, linkups should only be considered where more than 500 daily transfers occur.

The heaviest daily transfer movement in the CBD presently occurs between the Barton route and the Main West-West Hamilton portions of the Delaware route, amounting to more than 1,000 transfers daily. Accordingly, it appears likely that the Barton route should eventually be linked to a route in the Main Street West corridor. This could best be achieved by extending trolley coach service to the westerly City limits.

This proposal is not recommended for immediate implementation since it would involve a costly extension of trolley overhead or mixing trolley and diesel services. However, no other linkages of east-west routes should be considered at this time.

Mountain-Bayfront Connection

The possibility of linking one of the major Mountain routes to the Bayfront route was examined. For example, linking the Upper Sherman route to the Bayfront route would eliminate at least 150 transfers. However, such a linkup cannot be recommended because the delays which occur on the Bayfront route at railway crossings would result in delays on the Mountain portion of the route.

7. SERVICE TO INDUSTRY ON BURLINGTON STREET

An intensive study was made of the industrial area along Burlington Street with the cooperation of several of the major industries. There are 24,000 workers in the area including some 15,000 on day shifts. Roughly one-half of the employees live in the lower City, one-quarter live on the Mountain and the remainder live beyond the City boundaries. Only six percent of employees use public transit and three-quarters of the transit users live in the lower City.

Our conclusions are that the prospects of achieving a significant increase in ridership to the industrial area by express transit services are limited. The work and home locations of employees are dispersed. Shift changes are spread over a two to three-hour time period. Excellent free parking facilities are provided for all employees and many work locations are beyond an acceptable walking distance from routes on the nearest public streets.

Accordingly, the improvements developed for this area include improvements in the fixed route system to bring services closer to industrial workers. The recommendations are as follows:

1. Extend Sherman route east on Burlington, north on Ottawa and west on Industrial Drive. See Exhibit 6A.
2. Provide Sherman runs until 12:20 a.m. to serve the end of the afternoon shift.
3. Stelco should be encouraged to extend the internal service presently operating to the Wilcox gate over Stelco property to the Burlington gate. See Exhibit 6B.
4. Provide Bayfront service via Industrial Drive and Burlington Street, between the hours of 10:30 p.m. and 12:30 a.m.

5. Provide Bayfront service via Industrial Drive and Burlington Street on Saturdays, Sundays and Holidays at hours suitable for shift changes.
6. Extend Fennell service from Gage Avenue on Industrial Drive to Wilcox Street before turning back along Burlington Street. See Exhibit 6B.
7. Operate Industrial Drive service of the Fennell route until 5:30 p.m. to catch salaried workers leaving after 5:00 p.m.
8. Operate one additional run of the Fennell route to depart Wilcox and Burlington at 12:20 a.m. or delay present last bus to this time.

8. NEEDS OF THE HANDICAPPED

A problem of mobility clearly exists for handicapped persons to reach employment, shopping, recreation, treatment and training. There are no comprehensive records defining the problem or the resources already being used for transportation of the handicapped. More information is needed on these matters before policy decisions can be made. A premature decision in this regard could prejudice the assistance presently provided by volunteer organizations and senior levels of government. It could also commit the City to a program of undetermined magnitude. Accordingly it is recommended that a comprehensive study of transportation for the handicapped should be undertaken before a final policy in this regard is reached by the City or the Commission.

The cooperation of various handicapped agencies was enlisted to investigate transportation service to the handicapped. In Hamilton there are various health, welfare and voluntary agencies mainly related to types of disability. Most made it clear that they cannot meet present demands, that there are doubtless many cases which do not come to their attention and that there is no information on the overall problem.

General statistics from the Province and Social Planning and Research Council of Hamilton indicate that there are probably 36,000 persons with disabilities in Hamilton. Of these -

- 2,100 would be confined to home
- 2,700 would need help getting around and
- 4,500 would have trouble getting around.

Handicapped persons should not be encouraged to use regular transit services if it would expose them to danger or injury. However, there are several features which can be introduced which would expand the capability to handle some handicapped persons, and it is recommended that the Commission consider the following:

1. Provide general route and schedule information together with information on safe boarding and alighting methods.
2. Encourage handicapped associations and training agencies to give instruction on the use of public transit and possibly make a vehicle and operator available for this purpose.
3. Provide technical advice (e.g., operating methods, dispatching, equipment purchase, vehicle maintenance) to agencies operating special transit service for the handicapped.
4. Set aside one or more of the front seats on each bus for priority use by the handicapped. These seats to be signed:

RESERVED FOR THE HANDICAPPED

PLEASE GIVE UP TO A HANDICAPPED PERSON

5. Install grab bars, stanchions or seat arms where required to enable the handicapped to use a convenient handhold at all times when moving between the door of the vehicle and the priority seats reserved for their use. (The cost to do this will vary by vehicle, but this should not exceed \$250 to \$300 per vehicle).

6. Enter into agreements with other agencies to provide reserved bus services for the handicapped. This is particularly applicable at off-peak times when surplus vehicles and perhaps crews can be utilized.
7. Explore the feasibility of providing special equipment (e.g., wheelchair ramps, clamps, portable steps) on selected vehicles.
8. Encourage manufacturers and senior governments to develop new types of transit vehicles which are more convenient for the handicapped.

It is believed that most of these provisions can be introduced without an increase in the size of the bus fleet.

9. LIMITED STOP AND EXPRESS BUS SERVICE

During the course of this study the possibilities for express and limited stop services were reviewed. As a result of this review it has been concluded that large-scale development of express and limited stop services for the HSR system is not warranted at this time. Such services have little potential for time saving where the existing running time is less than 30 minutes and they must continue to operate in mixed traffic.

Express bus services are already being provided by Canada Coach Lines, particularly along Queenston Road and through the Town of Stoney Creek. We recommend that these CCL services be retained in their present format, using premium fares and no transfer privileges to HSR routes. The CCL schedules should be adjusted, where appropriate, to serve the commuter work trips to the central business district and information on the CCL services should be distributed more widely to residents east of Red Hill Creek.

The Vincent and Red Hill neighbourhoods generate enough trips to warrant a test of express service. It is recommended that a demonstration test be undertaken which provides two express buses between Vincent/Red Hill and the CBD during peak hours. The chief attraction of the service would be the direct journey to the CBD as well as a time saving. The test would determine the acceptance of express buses and could lead to tests in other areas. A premium fare would be warranted for trips on this service.

If the dial-a-ride and park-and-ride demonstrations and the proposal to develop a focal point terminus in the east end prove popular, they may concentrate sufficient traffic at single points to warrant other limited stop or express bus services.

At this time, the existing trips to the industrial area are insufficient in volume and trip length to warrant express bus service. However, it would be valuable to undertake an experiment to see if such services would attract new bus riders. The work in this direction may be based on the Ontario Ministry of Transportation and Communications' demonstration project now being sponsored in the Sudbury area.

10. DIAL-A-RIDE AND PARK-AND-RIDE

In addition to the investigation of methods to improve the effectiveness of the existing routes on the system, the study also examined the area served by HSR to determine what areas might be suitable for dial-a-ride and park-and-ride experiments.

Dial-a-ride is a local transit service which collects passengers in a specified area and carries them between their homes and designated terminals in response to a telephone call or prearranged booking. In its simplest form the service is usually provided by small 11-22-seat buses. These circulate through a residential area and carry passengers between their homes and a focal point, such as a shopping centre, where passengers may wish to stop or connect with a trunk route.

Park-and-ride provides residents with the opportunity to drive or be driven to a parking lot, usually on the outskirts of the developed area, where they can connect with a transit route.

Both types of service are of value in supplementing fixed route services, particularly in areas of poor accessibility or where density is low and a frequent fixed route service is hard to justify in terms of demand.

The areas selected for dial-a-ride and park-and-ride experiments are shown in Exhibit 7. Recommendations follow:

Dial-A-Ride

The suburban area with the best potential for a dial-a-ride demonstration project is Dundas. It is recommended that service studies of this area should be undertaken to determine the service which could

be provided, and the probable costs and revenues for a demonstration project. These studies would enable the Commission to determine if a trial should be implemented.

Other potential areas for dial-a-ride include:

- . the Mountain, south of Mohawk Road
- . Vincent/Red Hill Neighbourhoods
- . Stoney Creek/Saltfleet, possibly including the built-up areas in Hamilton east of Highway 20.

None of these areas possess all of the attractive features found in Dundas which has a good focal point with frequent service to Downtown Hamilton. The suburban neighbourhoods in Dundas are self-contained and, due to the street layout, extremely difficult to serve with a fixed route system. The area is large enough to support a reasonable trial service using about six buses.

The other potential areas have better transit service at present than Dundas, and better street layouts for a fixed route system. Their growth potential could eventually exceed the effective capacity of a dial-a-ride system. Accordingly, Dundas is a better prospect for the first demonstration of dial-a-ride in the area served by HSR.

Park-And-Ride

The objective of this part of the study was to locate parking lots in suburban areas convenient to existing trunk bus routes where capital costs for a park-and-ride trial could be kept to a minimum. Several locations have been identified and recommendations are as follows:

- . There is a closed supermarket lot near the westerly City limits at the junction of Highways 2 and 8. This could be adapted to a park-and-ride lot at minimum capital cost. If a trial service proves popular, parking could be expanded onto the adjacent hydro right-of-way and express bus service provided to the CBD.
- . For a similar demonstration project serving the Mountain there are two closed supermarket lots at the junctions of Fennell and Upper Wentworth and Fennell and Upper Gage which could be used for park-and-ride at minimum cost. Express bus services should be considered to both the CBD and the industrial area.
- . In the east end suitable park-and-ride sites should be sought on the parking lots of the commercial plazas along Queenston Road between Nash Road and Highway 20. If sufficient parking can be made available then a demonstration project in this area should be considered.
- . If park-and-ride demonstration projects on the above sites prove successful then consideration should be given to developing a new lot on the open space north of King Street between Potruff Road and the Red Hill Creek. Construction costs at this location would be at least \$60,000.

In each case, availability of the site should be investigated and studies should be carried out before undertaking a demonstration project.

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HAMILTON HARBOUR

LAKE ONTARIO

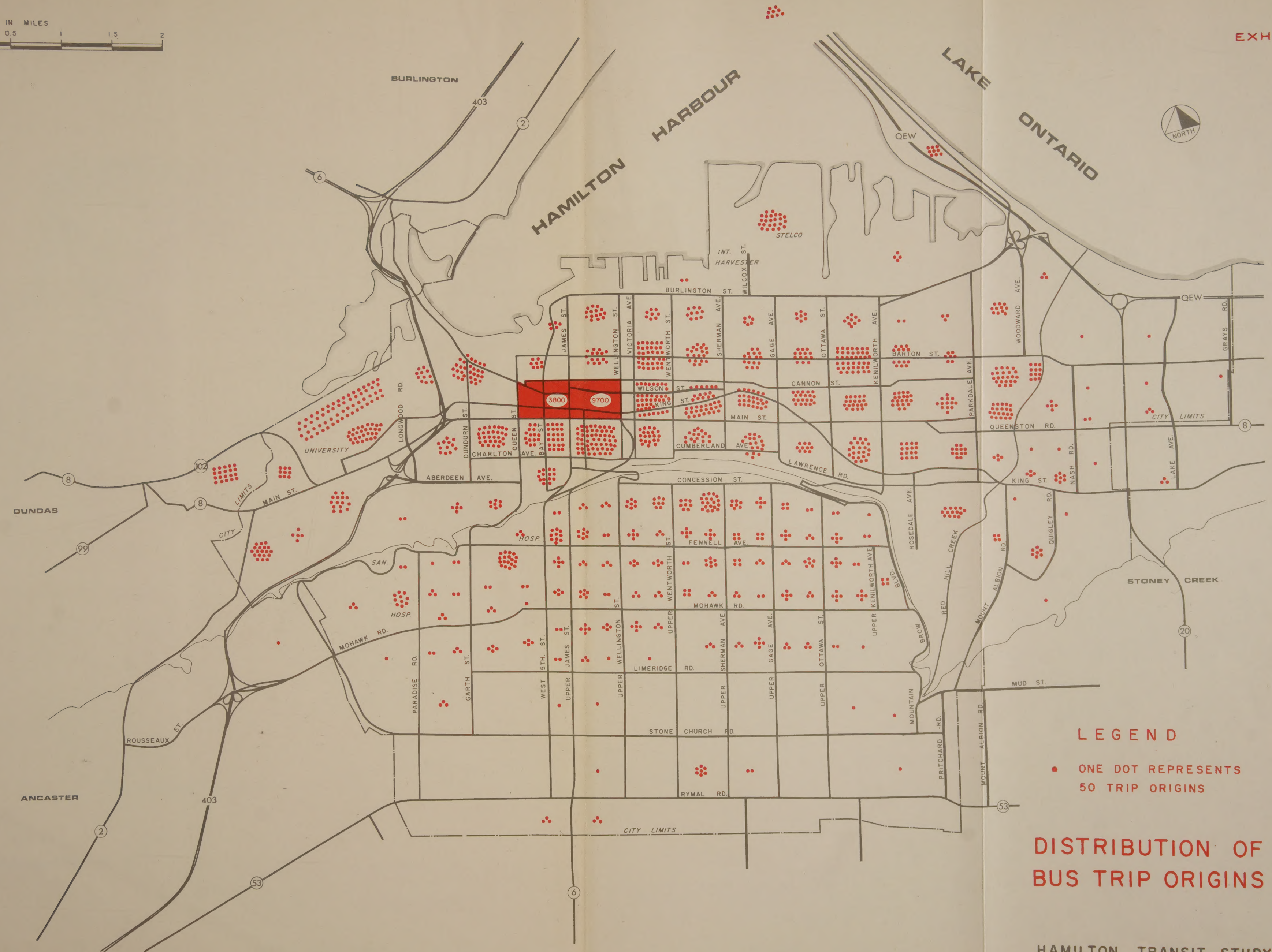
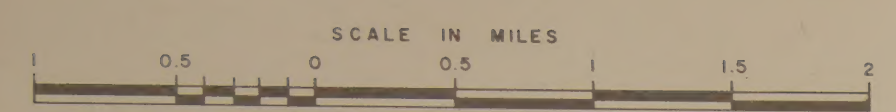


LEGEND

— EXISTING ROUTES

EXISTING BUS ROUTES
1973
(JANUARY)

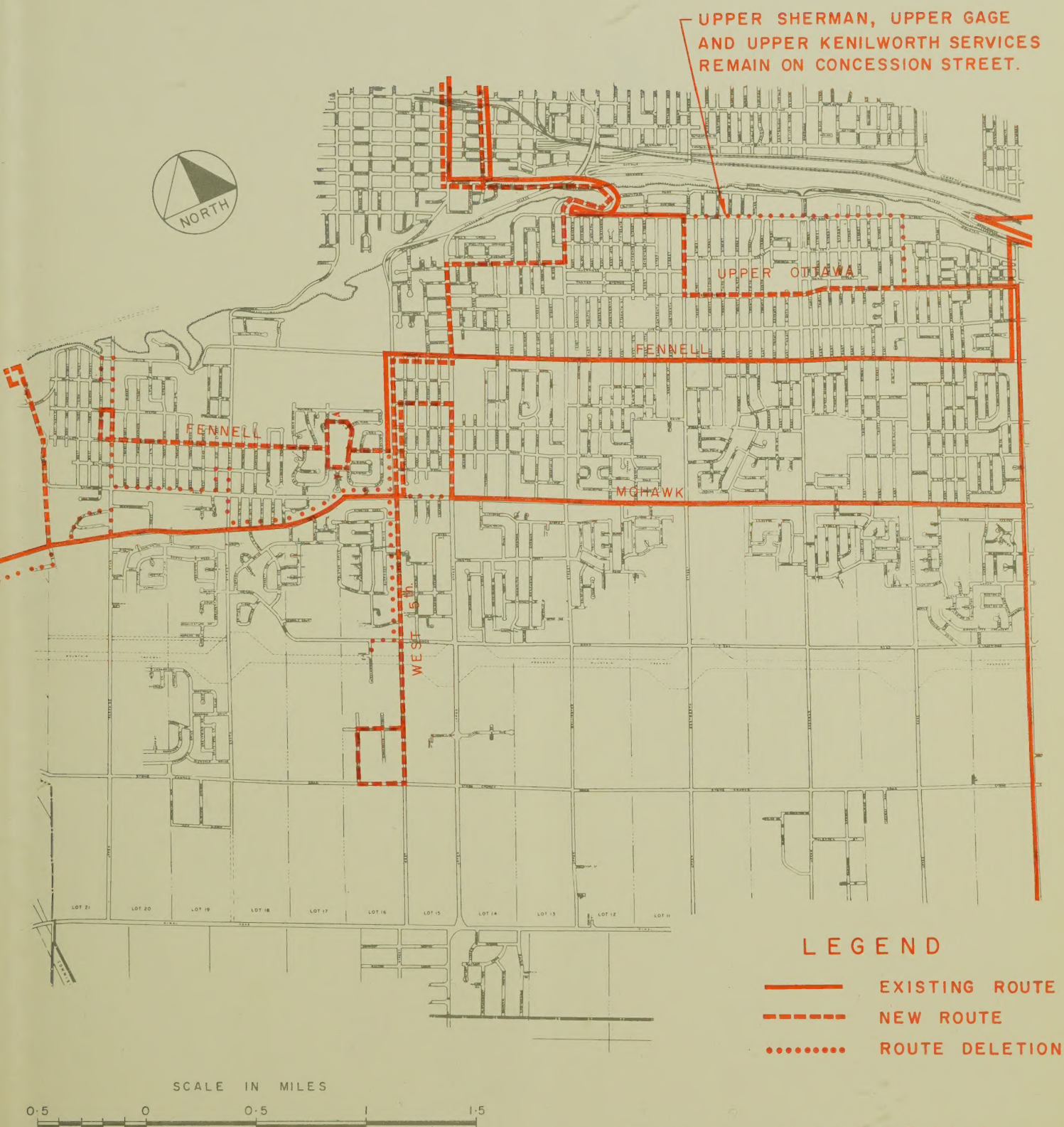
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PHASE II



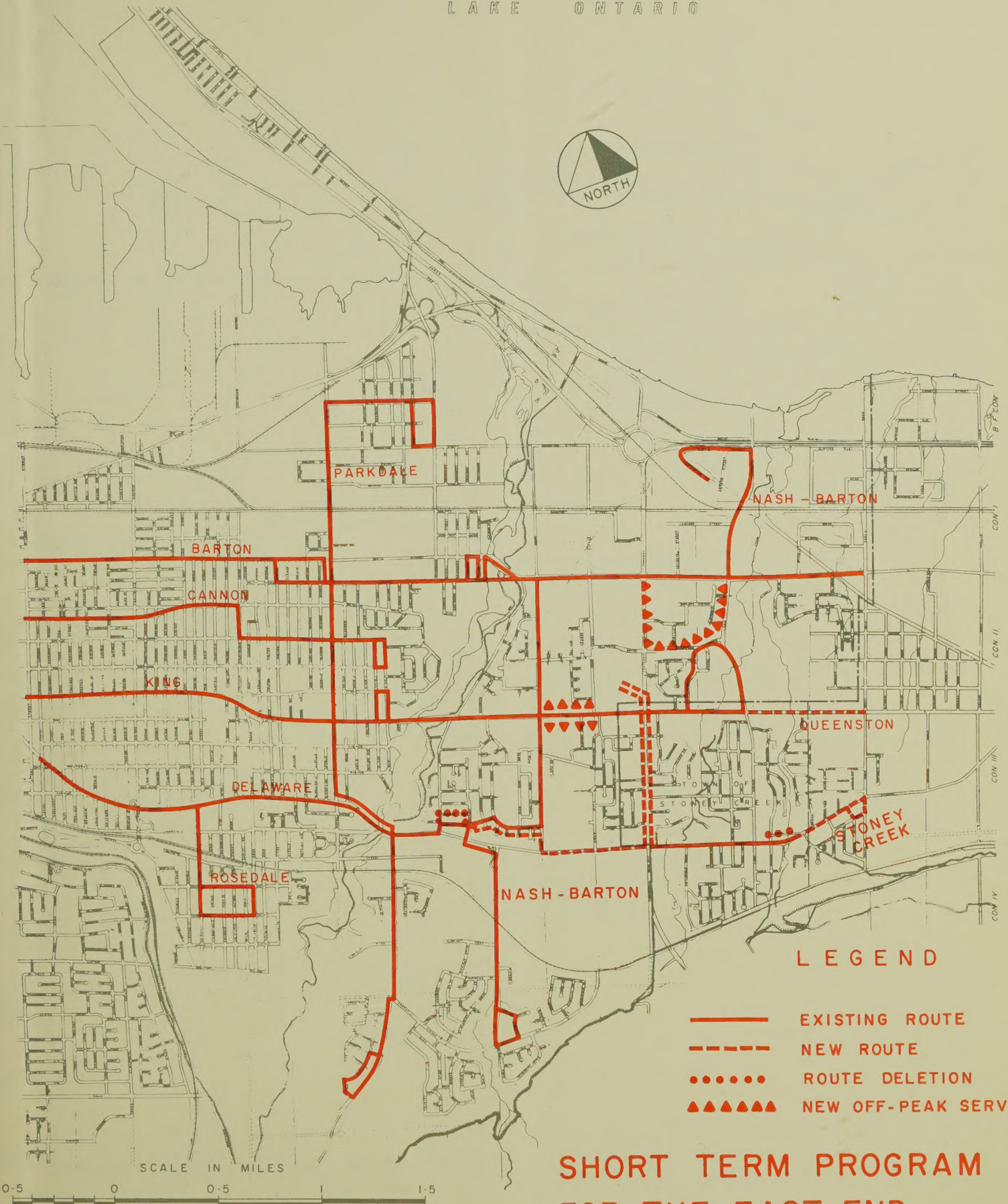
LEGEND

- ONE DOT REPRESENTS 50 TRIP ORIGINS

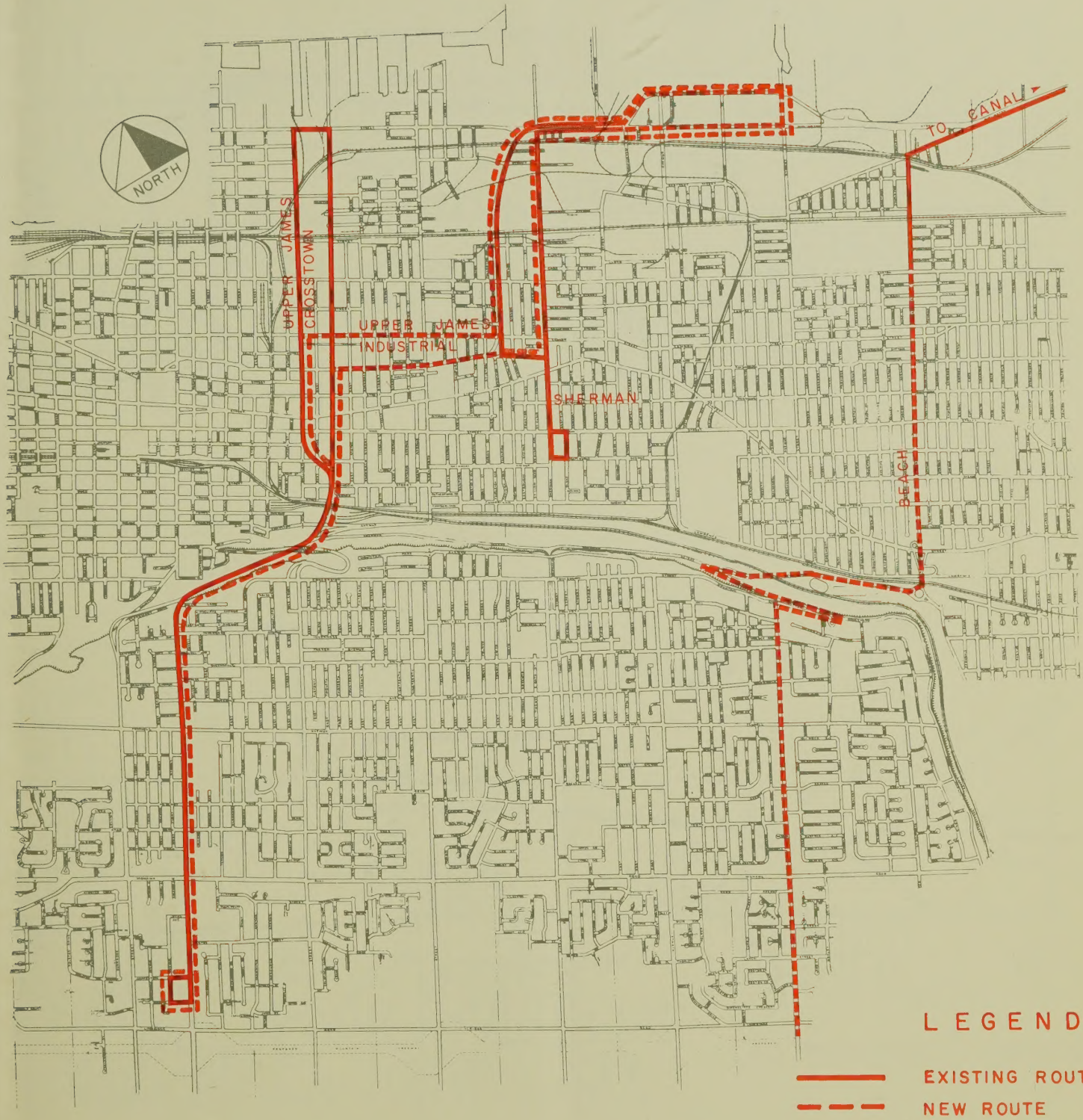
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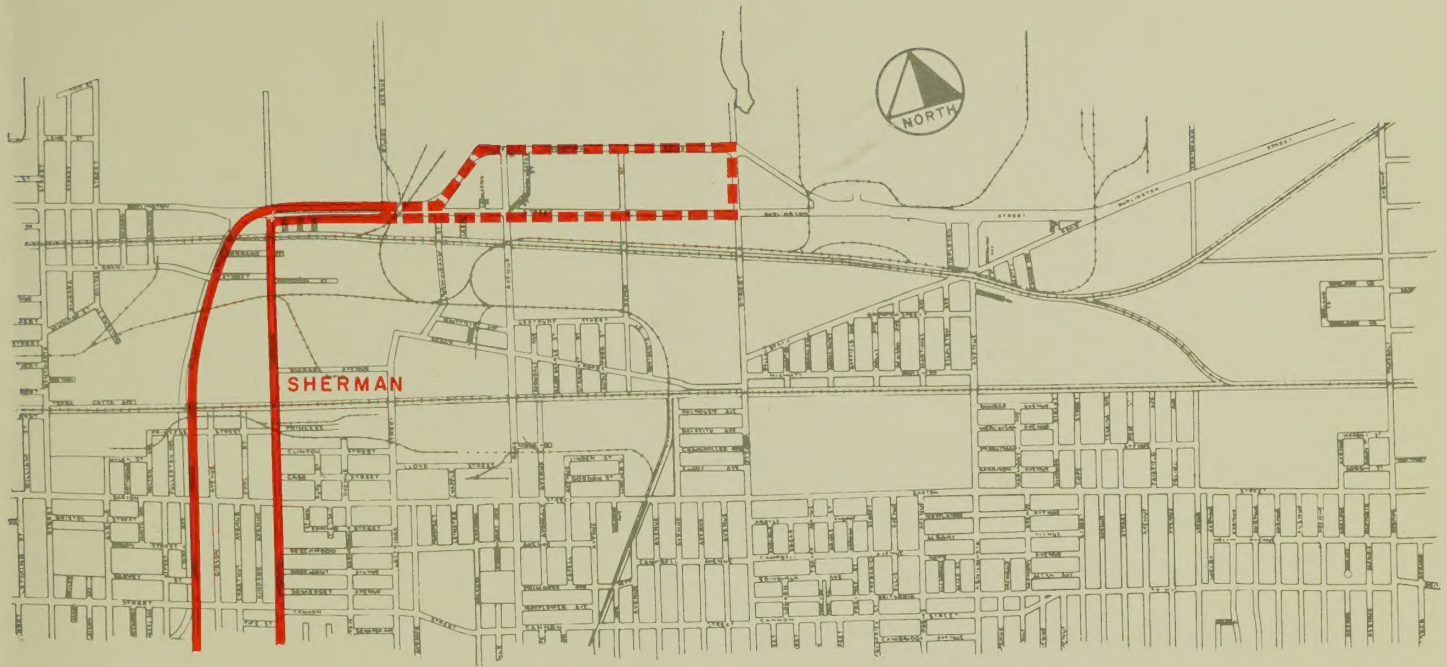
ROUTE PROPOSALS ON THE MOUNTAIN



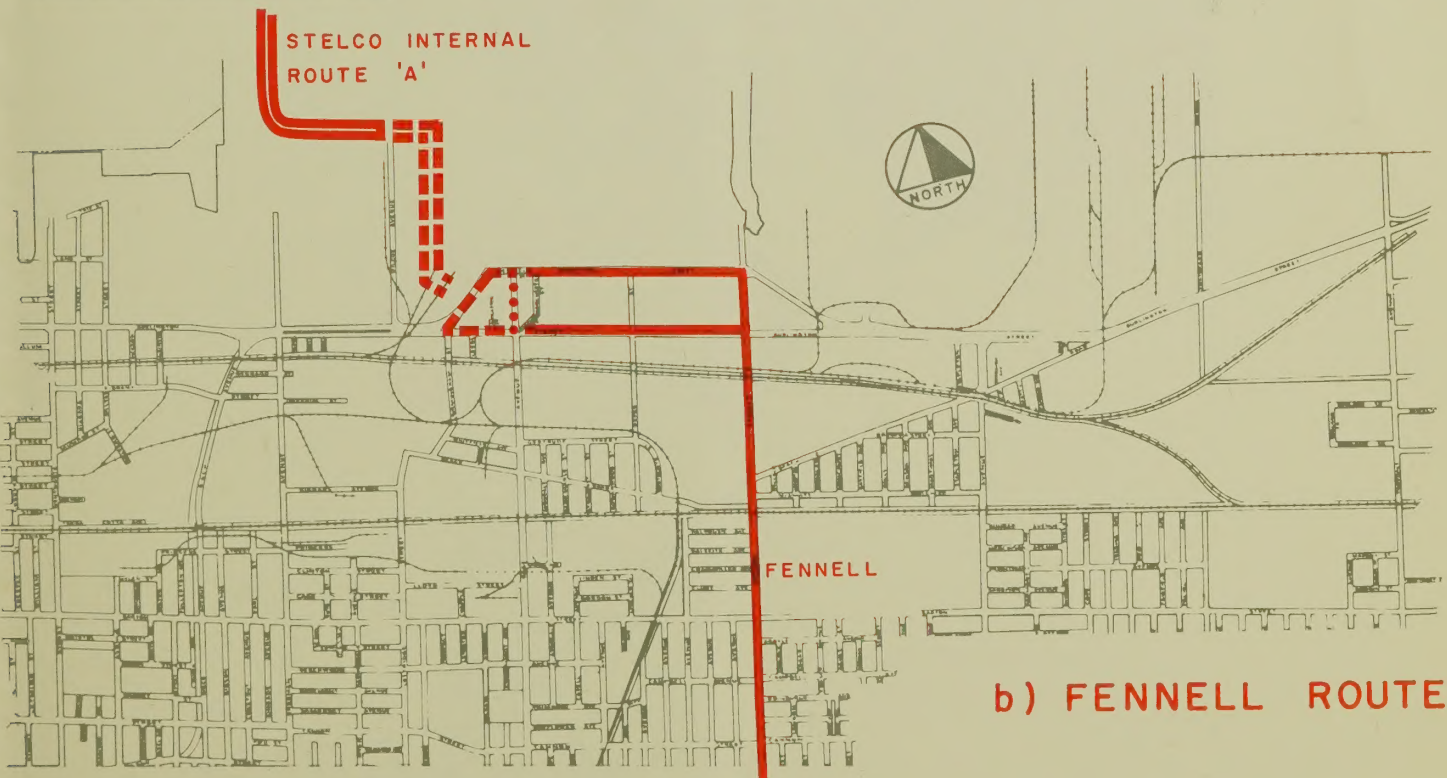
SHORT TERM PROGRAM FOR THE EAST END



ROUTE PROPOSALS IN THE CENTRAL AREA



a) SHERMAN ROUTE

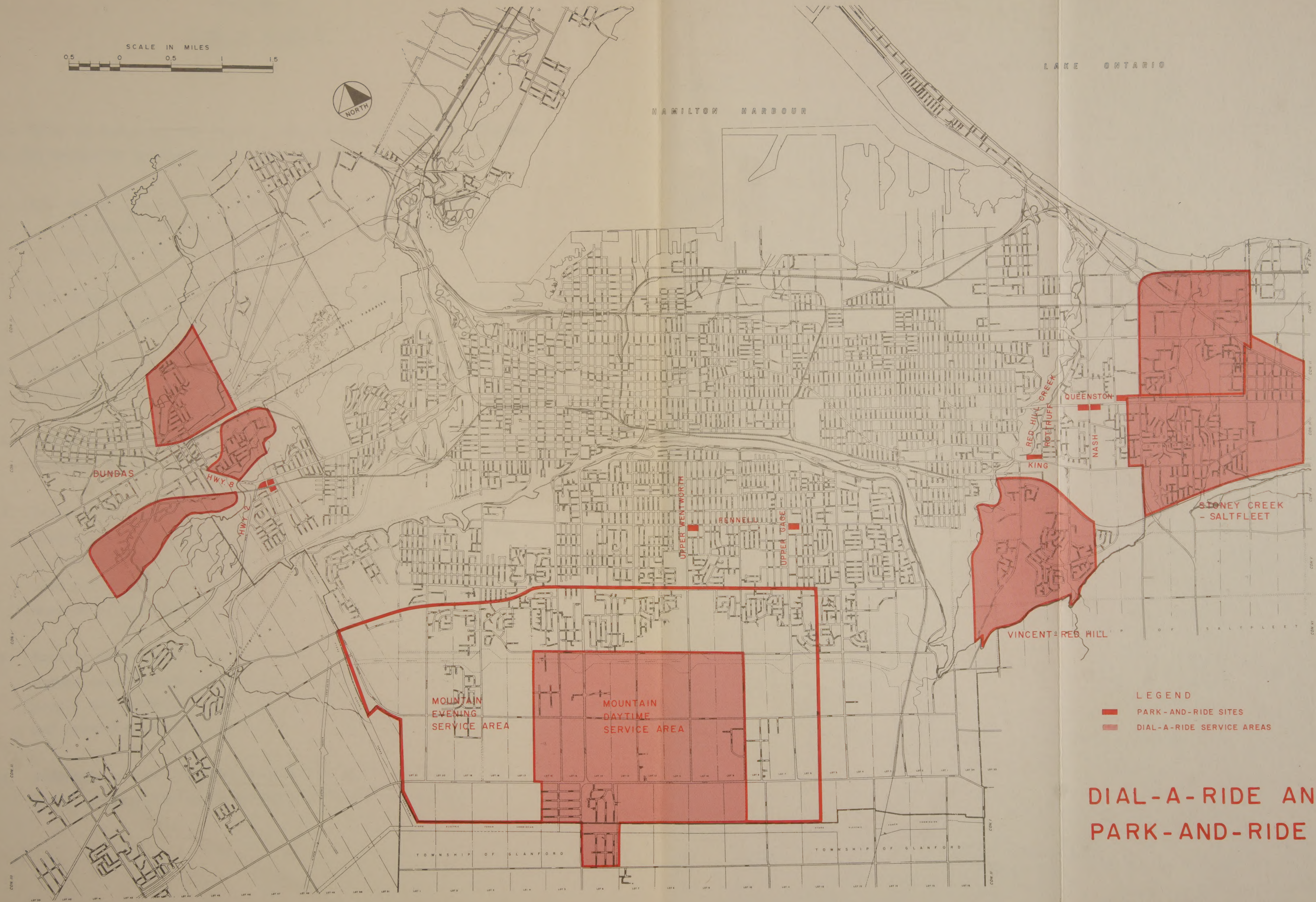


b) FENNELL ROUTE

LEGEND

- EXISTING ROUTE
- - - NEW ROUTE
- ROUTE DELETION

ROUTE PROPOSALS
SERVING
BAYFRONT INDUSTRY



- LEGEND
- PARK-AND-RIDE SITES
 - DIAL-A-RIDE SERVICE AREAS

DIAL-A-RIDE AND PARK-AND-RIDE AREAS

APPENDIX A

TERMS OF REFERENCE

The Terms of Reference for Phase II were given in the list attached to the Letter of Invitation, of June 30, 1972, as follows:

1. (a) *Review and cost the viable suggestions and requests for improved off-peak and weekend services advanced by the public in April/71 open meetings.*

(b) *Prepare for a programme of public information and involvement to publicize findings.*
2. *Develop a simplified format for published timetables and determine production expense.*
3. *Complete an individual cost-benefit study of the Beach, Fennell, Mohawk, Nash-Barton and Stoney Creek routes.*
4. *Examine the interface, or lack thereof, between in-plant distribution of personnel in the - north of Burlington Street - industrial community and our services on Burlington Street with a view to improving integration, bearing in mind protection of our exclusive franchise rights on public streets.*
5. *Explore in conjunction with a representative of the handicapped associations of Hamilton, the special needs of these people and establish the costs of adapting rolling stock and providing desirable facilities to meet these needs.*
6. *Undertake a more detailed examination of the high incidence of transferring as compared to transit operations*

in other communities. While possibilities for improvement are inferred in the Phase I Report, they are not enumerated.

- 7. Conduct an analysis of the potential for immediate through service between the Bayfront industrial area and the Mountain and West End districts respectively, either by regular route or special operations.*
- 8. Make a critical examination of the general proposal that a warrant exists at present for establishment of a high-density north-south corridor on the Mountain and a re-arrangement of the route pattern to feed this corridor without intensifying the transfer problem.*
- 9. A conceptual study is required within the communities served by the system to select an area suitable for a dial-a-ride or a park-and-ride experiment.*
- 10. In view of the political decisions made by dormitory communities with regard to support payment of our bus services, clarify the proposals for*
 - (a) limited stop routes between the far east end areas and the CBD.*
 - (b) express service between these points.*
- 11. It is anticipated that the Consultants will specify any related or preparatory tasks not included in the above summation that in their opinion are a prerequisite to a successful completion of the study and which in themselves would add significantly to the total study cost.*

At a meeting of the Technical Committee and the Consultants held on Thursday, August 24, 1972, these Terms of Reference were reviewed and the following changes were agreed:

Referring to item 1(a) of the Terms of Reference, meetings will be held with four organizations which submitted briefs at the April 1971 open public meetings. Others will receive letters advising them of any plans to explore their suggestions further.

Referring to item 1(b) of the Terms of Reference, a general programme of public information meetings will be carried out through the course of the study.

Referring to item 2 of the Terms of Reference, the Consultant will not be required to undertake this activity which is now in process by HSR staff.

Referring to item 9 of the Terms of Reference, this item will be interpreted as a general definition rather than a detailed definition of dial-a-ride and park-and-ride possibilities.

APPENDIX B

MEMBERS OF HAMILTON TRANSIT STUDY COMMITTEE

CHAIRMAN

- F. A. Cooke General Manager
 Hamilton Street Railway Company

MEMBERS

CITY OF HAMILTON

- R. Bailey Planning Commissioner
- R. J. Desjardins Traffic Commissioner
- W. Wheten City Engineer

MINISTRY OF TRANSPORTATION & COMMUNICATIONS

- L. R. Kidman Chief Operational Planner

HAMILTON STREET RAILWAY COMPANY

- H. Farthing Director of Research
- W. H. Smith Superintendent of Operations

ALTERNATES

CITY OF HAMILTON

- G. Pilpe Planning Department
- G. McCarthy Traffic Department
- J. Leach Engineering Department

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS

- D. Garner Senior Operational Planner
- M. MacMaster Head of Operational Planning Office

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